

WHAT IS CLAIMED IS:

1. A trapezoid signal generating circuit comprising:

a capacitor;

a first current output circuit for flowing to the capacitor a charging current having a command magnitude;

a second current output circuit for flowing from the capacitor a discharging current having a command magnitude which is K times ($K > 1$) the charging current when a waveform control signal is at a first level, and stopping the discharging current when the waveform control signal is at a second level; and

a current control circuit for supplying the first current output circuit with a command signal so that the charging current continuously increases from a time point when the waveform control signal changes from the first level to the second level and continuously decreases after a trapezoid signal reaches a predetermined reference level, and for supplying the first and the second current output circuits with the command signal so that both of the charging current and the discharging current continuously increase from a time point when the waveform control signal changes from the second level to the first level and continuously decrease after the trapezoid signal reaches the predetermined level.

2. The trapezoid signal generating circuit according to claim 1, wherein the current control circuit generates the

command signal so that the charging current and the discharging current increase and decrease in accordance with a linear function with respect to an elapse of time from a time point of a level change in the waveform control signal.

5

3. The trapezoid signal generating circuit according to claim 1, wherein the current control circuit generates the command signal so that the charging current and the discharging current increase and decrease in accordance with a quadratic function with respect to an elapse of time from a time point of a level change in the waveform control signal.

10

4. The trapezoid signal generating circuit according to claim 1, wherein the reference level is set to one half of a power supply voltage, and the current control circuit generates the command signal so each of the charging current and the discharging current increases and decreases at changing rates equal to each other.

15

5. The trapezoid signal generating circuit according to claim 1, wherein the current control circuit generates the command signal, which enables a continuous flow of a predetermined offset current as the discharging current while the waveform control signal is at the first level, and enables a continuous flow of a predetermined offset current as the charging current while the waveform control signal is at the second level.

20

25

6. The trapezoid signal generating circuit according to claim 1, wherein:

the first and the second current output circuits are constructed to produce the currents in accordance with an input command voltage;

the current control circuit is constructed to have at one or more cascade-connected charging and discharging circuit and produces the command voltage from a last one of the charging and discharging circuit; and

the charging and discharging circuit is constructed with a command signal capacitor which produces a voltage from both terminals, and a charging and discharging circuit which charges the command signal capacitor with a current corresponding to an input voltage from a time point of a level change of the waveform control signal and discharges the command signal capacitor with a current corresponding to an input voltage after the trapezoid signal reaches the reference level.

7. The trapezoid signal generating circuit according to claim 6, wherein the current control circuit is constructed with a single-stage charging and discharging circuit, and a fixed voltage is applied to the single-stage charging and discharging circuit.

8. The trapezoid signal generating circuit according to claim 6, wherein the current control circuit is constructed with a two-stage charging and discharging circuits, and a fixed voltage is applied to a first one of the two-stage charging and discharging circuits.

5